

# **CelSian – NCNG International Glass Technology Course**

**for the  
Glass Industry in the UK**

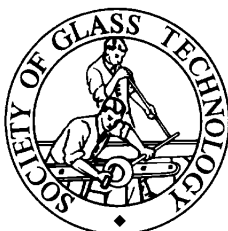
**Sheffield, Society of Glass Technology / British Glass building**

**29<sup>th</sup> Feb to 4<sup>th</sup> March, 2016**

**In cooperation with:**



Simpson Combustion and Energy Ltd



## Introduction & Summary

CelSian Glass & Solar B.V. organizes on regular basis a five-day highly technical, comprehensive Glass Technology training course focused on industrial glass production. This course is developed in cooperation with the NCNG (National Committee Netherlands Glass industry).

To celebrate the Society of Glass Technology (SGT) centennial, and teaming up with Neil Simpson, the next CelSian – NCNG International Glass Technology Course is scheduled on **Monday, 29<sup>th</sup> February until Friday 04<sup>th</sup> March 2016** (5 days) in Sheffield, a central place for the of glass science and industry in the UK. The course is open for the employees of the glass producing industry and related suppliers. The training course is hosted at the building of SGT and British Glass in Chapeltown, Sheffield.

This in-depth course covers many aspects of glass and glass production: from raw materials to formed product, including glass structure & properties and glass melting technology. Since 1990, this course has been given to more than 1200 employees from glass industries worldwide. All presentations will be formatted in PowerPoint, and will be in the English language. All participants will receive a comprehensive text book (800 pages), and a PDF copy of the slides used during the course.

This five-day training course is being offered for £2850,- per participant. The fee for employees of Glass Trend member companies is £2300,-. These costs include an introductory e-learning course by internet, lunches and drinks during the breaks, two dinner invitations, and excluding taxes/duties, hotel accommodation and travel costs.

In addition, all attendants will receive access to our interactive e-learning course, allowing the viewing of 11 short films online (trailer available on [www.glasstrend.nl](http://www.glasstrend.nl), Tab Events & Agenda). The movies are accompanied by multiple choice questionnaires accessible to the participants in a period of 2 weeks preceding the classical course, for an evaluation on a self-test basis. The required time to take this introductory course is around 2 hours.

Cancellation fee:

- Before Jan. 8<sup>th</sup>, 2016: free of charge
- Jan 8<sup>th</sup> – Jan 31<sup>st</sup>, 2016: 50% of the registration fee will be charged
- Feb 1<sup>st</sup> – Feb 28<sup>th</sup>: 75% of the registration fee will be charged
- No show: full registration fee will be charged

The tentative program can be found on page 4 & 5, with more details on the content per subject on pages 6 & 7.

## Target group

The course is meant for experienced engineers in the glass industry to receive a more detailed understanding of the glass production, entrants in the glass producing industry and related suppliers and young glass technologists and scientists. Level: high technical and academic.

**Registration is now open** (online registration only)

<http://www.glasstrend.nl/web/events-CelSian-NCNG-glass-technology-course-29feb-4march-2016.php>

(GlassTrend website, [www.glasstrend.nl](http://www.glasstrend.nl), Tab Events & Agenda)

The number of places available is limited to 25.

**All the participants will receive:**

- A 5-day classical course dedicated to glass technology for glass industries
- An introductory e-learning course by internet, in the 2 weeks-period preceding the classical course
- A comprehensive textbook on industrial glass production, glass properties and glass technology of about 800 pages
- The Power Point presentations (pdf formatted presentations)
- Lunches & classroom access
- 2x Dinner/evening events



**Location:** at the **Society of Glass Technology / British Glass Building**  
9 Churchill Way  
Sheffield, South Yorkshire, UK

**Please make your own hotel room reservations.**

# Program Glass Technology Course

29/02 – 04/03 2016

**Host:** Society of Glass Technology and British Glass  
**Place:** Sheffield, UK  
**Location:** SGT/ British Glass building, 9 Churchill Way

## Program

### Monday, 29 February 2016

08.30 – 09.15 hr	Welcome & Introduction
09.15 – 12.30 hr	Module on Glass Structure & Properties, part 1
12.30 – 13.30 hr	Lunch
13.30 – 17.30 hr	Module Glass Structure & Properties, part 2

### Tuesday, 01 March 2016

09.00 – 12.30 hr	Module on Raw Materials & Batch Preparation
12.30 – 13.30 hr	Lunch
13.30 – 17.30 hr	Module on Glass Furnaces, part 1
18.30 – 21.30 hr	Social event, dinner in Sheffield area <i>(invited by CelSian Glass &amp; Solar)</i>

### Wednesday, 02 March 2016

09.00 – 12.15 hr	Module on Glass Furnaces, part 2
12.15 – 13.00 hr	Lunch
13.00 – 18.00 hr	Visit to DSF Refractory plant in Newhaven, Derbyshire <i>Transport to the plant is provided</i>

### **Thursday, 03 March 2016**

09.00 – 12.30 hr	Module on Melting and Fining Processes, part 1
12.30 – 13.30 hr	Lunch
13.30 – 15.00 hr	Module on Melting and Fining Processes, part 2
15.00 – 17.30 hr	Module on Energy and Emissions, part 1
18.30 – 21.30 hr	Social event, dinner in Sheffield area <i>(invited by CelSian Glass &amp; Solar)</i>

### **Friday, 04 March 2016**

09.00 – 12.30 hr	Module on Energy and Emissions, part 2 Module on Recycling
12.30 – 13.30 hr	Lunch
13.30 – 16.00 hr	Module on Glass Defects

**Course will finish at ±16.00 hrs.**

The arrangement of the different modules and the program of the visits may be subject to changes. The final program will be communicated to all the confirmed participants approx. one week prior to the beginning of the course.

More info about the content of the course can be found in the following pages.

**For registration, please fill in the form online:**

<http://www.glasstrend.nl/web/events-CelSian-NCNG-glass-technology-course-29feb-4march-2016.php>

The number of places available is limited to 25.

## Content of the course:

The course includes the following subjects:

1. Glass structure and Glass (melt) properties (1 day)
  - a. Glass Chemistry and Physics
  - b. Optical properties
  - c. Mechanical properties
  - d. Physical properties
  - e. Flow properties
  - f. Heat conduction
  - g. Chemical resistance of glass
  - h. Colouring of glass
  
2. Raw materials for glass (0.5 day)
  - a. Raw material evaluation
  - b. Selection criteria
  - c. Batch preparation and transport
  - d. Batch compositions
  
3. Melting processes in glass furnaces (3/4 day)
  - a. Melting and fusion of raw materials
  - b. Sand grain dissolution
  - c. Removal of gases (bubbles) – fining, foaming and refining
  - d. Redox chemistry and colour issues
  - e. Homogenisation
  
4. Glass furnace design, operation and control (1 day)
  - a. Furnace designs
  - b. Refractories and behaviour refractory in glass furnaces
  - c. Combustion systems
  - d. Furnace operation & control

5. Energy efficiency of glass furnaces & emissions (1/2 day)
  - a. Energy balances & Energy saving methods
  - b. Emissions and their sources
  - c. Chemistry of flue gases
  - d. Air pollution Control
  
6. Recycling of glass (1/2 day)
  - e. Purification of waste glass
  - f. Recycling technologies
  - g. Redox sensors & organic materials in recycled glass
  
7. Glass defects and glass quality (1/2 day)
  - h. Gas bubbles and their origin
  - i. Knots and their origin
  - j. Stones
  - k. Cords
  - l. Investigation methods for glass faults (defects)